IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of | Atty. Docket

DAVID H. THIBADO | PHA 23,583C

Serial No.

Filed: CONCURRENTLY

Title: METHOD FOR AIR-WOUND COIL VACUUM PICK-UP, SURFACE MOUNTING, AND ADJUSTING (AS AMENDED)

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to calculation of the filing fee and examination, please amend the above-identified application as follows:

IN THE TITLE

Please change the current title to the following:

--A CIRCUIT BOARD WITH AN AIR-WOUND COIL FOR VACUUM PICK-UP, SURFACE MOUNTING, AND ADJUSTING--.

IN THE SPECIFICATION

Page 4, after line 33, insert as a new paragraph:

--The terminals may be straight sections of the wire that forms the coil, as shown in figure 1, with these straight sections extending tangentially from the coil so that these terminals can be placed on a flat pad on a circuit board, as shown in figures 3-5 . The coil is preferably an air coil as shown, that is, the coil does not contain a core. Preferably, the coil is made from a highly conductive metal such as highly purified copper. The wire of the coil may be 0.05 to 1 mm in diameter and the coils are spaced between 1.1 and 20 times the diameter of the wire, and more preferably from 2 to 10 times the diameter of the wire. The coils are spaced between 2 and 10 times the diameter of the wire and the diameter of the loops is between 10 and 100 times the diameter of the wire. The loops are produced with a predetermined manufacturing

tolerance, and after the coil is connected to a circuit board, the spacing of the loops is adjusted, such that the loop spacing is outside the manufacturing tolerance of the loops.

IN THE CLAIMS

Please amend the claims as follows:

Cancel claim 1.

2. (amended) A circuit board, comprising:

a dielectric substrate [(126)]:

a plurality of electrically conductive pads connected to the substrate [(127, 128)] for electrical interconnection [with] of components to the pads;

wiring [(129)] extending between the pads;

one or more coils [(122)] of wire bent into a plurality of sequential loops;

multiple terminals [(123, 124)] extending between each coil and respective pads;

an electrically conductive material [(130, 132)] connecting between the pads and respective terminals;

means [(125)] including a surface of material connected to the coils extending over a plurality of the coils for pick-up with a vacuum head of a pick-and-place machine, and adapted for adjusting [the spacing] a position of the loops of the coils for tuning the coils, after the coil is attached to the circuit board.

Cancel claim 3.

4. (amended) The board [package] of claim 2 [1] in which the surface includes a portion which can be removed from the wire coil without damaging the wire coil, so that a position of [the spacing between] the loops of the coil can be changed to tune the coil.

5. (amended) The board [package] of claim 2 [1] in which the surface does not extend [onto] between all [some] of the loops of the coil so that a position of [the spacing between] the loops, between which the surface does not extend, can be changed by bending the coil for tuning the coil.

6. (amended) The board [package] of claim 2 [1] in which the surface is sufficiently weak or flexible so that the loops [on] between which the surface extends can be easily bent to adjust a position of [the spacing between] the loops sufficient for tuning the coil without otherwise damaging the coil.

7. (amended) the board [package] of claim 2 [1] in which the surface is degraded by exposure to a solvent that can be used to wash the circuit board after the board [package] is connected to the circuit board, whereby the loops can be bent to adjust a position of [change the spacing between] the loops for tuning the coil.

8. the board [package] of claim 7 in which the surface is degraded by exposing the surface to water and at least a portion of a material of the surface can be removed by washing in water without damaging the coils.

9. The board [package] of claim 2 [1] in which the surface is degraded by heating the circuit board after which the separation between the loops can be changed by bending the loops for tuning the coil.

10. (amended) The board [package] of claim 9 in which the material of the surface flows when exposed to soldering temperature of eutectic Pb/Sn alloy, so that after heating the circuit board to reflow the solder at least some of the [coils] loops become [mechanically separable to allow] bendable for tuning the coil.

11. (amended) The board [package] of claim 9 in which the material of the surface sublimates when exposed to soldering temperature of eutectic Pb/Sn alloy, so that after reflow soldering the circuit board at least some of the [coils] loops become [mechanically separable] bendable for tuning the coil.

12. (amended) The board [package] of claim 6 in which the surface is sufficiently soft and arranged, so that it can be easily cut between loops of the coil using [snippers] a tool without damaging the coil and then [the spacing between two] a position of the loops of the coil can be adjusted to tune the coil.

Cancel claims 13-14.

Please add the following new claim:

15. The board of claim 2 in which:

the surface includes a portion which can be removed from the wire coil without damaging the wire coil so that a spacing between the loops of the coil can be changed to tune the coil;

the surface does not extend onto some of the loops of the coil so that a position of the loops can be changed by bending the coil for tuning the coil;

the surface is sufficiently weak or flexible so that the loops on which the surface extends can be easily bent to adjust a position of the loops sufficient for tuning the coil without otherwise damaging the coil;

the surface is degraded by exposure to a solvent that can be used to wash the circuit board after the coil is connected to the circuit board whereby the loops can be bent for adjusting a position of the loops for tuning the coil;

the surface is degraded by exposing the surface to water and at least a portion of a material of the surface can be removed by washing in water without damaging the coils;

the surface is degraded by heating the circuit board after which the separation between the loops can be changed by

bending the loops for tuning the coil;

the material of the surface flows when exposed to soldering temperature of eutectic Pb/Sn alloy so that after heating the circuit board to reflow the solder at least some of the coils become mechanically separable for tuning the coil;

the material of the surface sublimates when exposed to soldering temperature of eutectic Pb/Sn alloy so that after reflow soldering the circuit board at least some of the coils become mechanically separable for tuning the coil;

the surface is sufficiently soft and arranged so that it can be easily cut between loops of the coil using a tool without damaging the coil and then a position of the loops of the coil can be adjusted to tune the coil;

the material of the surface includes a water soluble material;

the terminals are strait sections of wire extending tangentially to the loops of wire at each end of the coil of wire;

the coil is an air coil without any core;

the wire is nearly pure copper;

the wire is between .05 mm and 1 mm in diameter;

the coils are spaced between 1.1 and 20 times the diameter of the wire; and

the diameter of the loops is between 10 and 100 times the diameter of the wire.

16. The board of claim 2 in which the coils are spaced between 2 and 10 times the diameter of the wire.

REMARKS

The Applicant respectfully requests entry of the above amendment prior to examination.

The above amendments are submitted to place this application in proper U.S. format. Entry of the amendment and an early action on the merits are solicited.

Respectfully submitted,

By Michael E Belk
Michael E. Belk, Reg. 33,357
Patent Attorney
(914) 333-9643